

# Nitrate and Pesticide Data for Waters of the Mid-Atlantic Region

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Selected water-quality data for surface-water and ground-water sites in the Mid-Atlantic Region are available in computer files. Available data include pesticide concentrations from 2,545 samples collected from 463 surface-water sites between October 1973 and March 1997; nitrate or pesticide concentrations from 1,551 samples collected from 937 ground-water sites between October 1985 and September 1996; and selected ancillary data. These data were compiled in 1997 as part of an assessment of regional conditions and are summarized in two published reports. Compiled data are useful for describing patterns of pesticide occurrence and water quality in the Mid-Atlantic States, but were collected for different purposes using many different sampling designs and techniques and do not represent a random, unbiased sampling of regional conditions.

## INTRODUCTION

The U.S. Geological Survey (USGS) has recently completed analyses of the occurrence of nitrate and pesticides in waters of the Mid-Atlantic Region as part of the Mid-Atlantic Integrated Assessment (MAIA) project of the U.S. Environmental Protection Agency (USEPA). The MAIA project encompasses USEPA Region III and adjacent parts of major river basins in New Jersey, New York, and North Carolina (fig. 1). Water-quality data collected between October 1985 and September 1996 were used to describe the occurrence of nitrate and pesticides in ground water in the report:

Nitrate and Selected Pesticides in Ground Water of the Mid-Atlantic Region, by S.W. Ator and M.J. Ferrari (1997).

Data collected from 463 sites between October 1973 and March 1997 were used to characterize the occurrence of pesticides in surface water of the Mid-Atlantic Region in the report:

Pesticides in Surface Water of the Mid-Atlantic Region, by M.J. Ferrari, S.W. Ator, J.D. Blomquist, and J.E. Dysart (1998).

Nitrate was not included in this report because other studies have focussed on the regional occurrence of nitrate in streams.

Water-quality data compiled by the USGS for regional analyses of pesticides in surface water and nitrate and pesticides in ground water of the Mid-Atlantic Region as part of the MAIA project are presented and described in this report and accompanying computer files. Selected available ancillary data (including site locations, well depths, and stream discharges) and original citations for the data are included. Although some of the data are continuously reviewed, revised, and updated, the data are presented as they were when compiled in 1997.

## DATA COMPILATION

Nitrate and pesticide data were compiled for a large part of the Mid-Atlantic Region, although spatial and temporal gaps in available data are considerable (fig. 1; table 1). Only data collected by or in cooperation with the USGS were compiled. All available analyses of pesticides in surface-water samples collected between October 1973 and March 1997 in the Mid-Atlantic Region were compiled from the USGS's National Water Information System (NWIS) data bases in April 1997. Additional surface-water data not available in NWIS were compiled from



Figure 1. Data were compiled from 463 surface-water and 937 ground-water sites in the Mid-Atlantic Region.

the Chesapeake Bay Fall Line Toxics Monitoring Program. Ground-water-quality data collected between October 1985 and September 1996 were compiled only from projects with study areas at least the size of a single county, to minimize spatial bias in the regional analyses. Much of the available surface- and ground-water-quality data were collected as part of the National Water-Quality Assessment (NAWQA) Program (Gilliom and others, 1995) in six study units within the Mid-Atlantic Region (table 1). Most NAWQA data were compiled in early 1997; surface-water data from the Albemarle-Pamlico Drainages were compiled in October 1997. Future sampling is planned by the NAWQA Program in much of the Mid-Atlantic Region and additional data may become available.

Compiled data are useful for describing spatial and temporal patterns in pesticide occurrence and water quality in the Mid-Atlantic Region; however, they were collected using many different sampling designs and techniques and do not represent a random, unbiased sampling of regional conditions. The applicability of these data to certain analyses and conclusions is limited by the assumptions and objectives of those who collected each sample. The usefulness of the data is further limited by the accuracy and precision of sampling and analytical techniques at the time the data were collected.

Table 1. Selected projects from which data were compiled

Network code	Project	Reference
albe	Albemarle-Pamlico Drainages <sup>1</sup>	Spruill and others, 1995
almn	Allegheny-Monongahela River Basins <sup>1</sup>	McAuley, 1995
dlnv	Delmarva Peninsula <sup>1</sup>	Koterba and others, 1991 Bachman and Phillips, 1996
lsus	Lower Susquehanna River Basin <sup>1</sup>	Siwec and others, 1997
mdne	Maryland Water-Quality Network	Bolton, 1996
njna	Natural Radioactivity in Ground Water of the Kirkwood-Cohansey Aquifer System, NJ	Kozinski and others, 1995
njne	New Jersey Water-Quality Network	William Bauersfeld, U.S. Geological Survey, written commun., 1997
njvu	Ground-Water Pesticide Vulnerability, NJ	Clawges and others, <i>in press</i>
poto	Potomac River Basin <sup>1</sup>	Gerhart and Brakebill, 1997
tx92	Chesapeake Bay Fall Line Toxics Monitoring Program (1992)	U.S. Environmental Protection Agency, 1994
tx94	Chesapeake Bay Fall Line Toxics Monitoring Program (1994)	U.S. Environmental Protection Agency, 1996
uten	Upper Tennessee River Basin <sup>1</sup>	Hampson, 1994
wvel	Elk River Basin, WV	Mathes and Ward, 1990
wvne	West Virginia Water-Quality Network	Kozar and Brown, 1995

<sup>1</sup> National Water-Quality Assessment (NAWQA) Program study unit.

## DATA STRUCTURE AND CODING

Compiled nitrate and pesticide data for the Mid-Atlantic Region and supporting information are contained in four tab-delimited ASCII files which may be obtained along with this report from <http://water.usgs.gov/lookup/get?mdwater/maia>. The data fields are defined in headers at the beginning of each file, which are denoted with “#” symbols at the beginning of each line. The file, *SWDATA*, contains available pesticide and discharge data from 2,545 samples collected from 463 different surface-water sites. The file, *GWDATA*, contains available nitrate and pesticide data from 1,551 samples collected from 937 different sites. Parameter codes (defined in the file, *PCODES*) indicate the chemical compound to which data values apply and are mostly standard NWIS codes. Selected available site-descriptive data for each site from which compiled water-quality data were collected are contained in the file, *SITES*.

Data are mostly presented as they were in original sources. Many pesticide concentrations are coded with zero values, presumably indicating the compounds were undetected and analytical method detection levels were not available. Some pesticide concentrations from the Delmarva NAWQA study unit were flagged as “5555” by project personnel to indicate the compounds were detectable but concentrations were below reporting levels (Koterba and others, 1993). Sample times were not available from the Chesapeake Bay Fall Line Toxics Monitoring Program; dates were not available for a few ground-water samples.

Some data have been modified for clarification or analytical purposes. Some pesticide data were omitted due to questionable quality assurance. Codes were assigned to most data values in the compiled data files to identify source networks or projects (table 1). These codes were assigned by site rather than by individual sample and are therefore uncertain in cases where sites have been sampled as part of multiple projects. Published pesticide concentrations from the Chesapeake Bay Fall Line Toxics Monitoring Program in nanograms per liter were converted to micrograms per liter for consistency with the rest of the compiled data and were rounded to four significant figures.

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